

constructing the surface and subsurface facilities in portions, or “modules”). This approach would facilitate the ability to incorporate “lessons learned” from initial work into subsequent modules, reduce initial construction costs and investment risk, and potentially increase confidence in meeting the schedule for waste receipt and emplacement. DOE has requested that the National Research Council continue the study of possible repository development strategies (DIRS 153849-DOE 2001, Section 2.1.3).

2.1.5 ESTIMATED COSTS ASSOCIATED WITH THE PROPOSED ACTION

DOE has estimated the total cost of the Proposed Action to construct, operate and monitor, and close a geologic repository at Yucca Mountain, including the transportation of spent nuclear fuel and high-level radioactive waste to the repository (DIRS 156900-DOE 2001, all). The estimate is based on acceptance and disposal of about 63,000 MTHM of commercial spent nuclear fuel, 2,333 MTHM of DOE spent nuclear fuel, and 8,315 canisters of solidified high-level radioactive waste (4,667 MTHM). Table 2-5 lists the estimated costs. The total future costs from 2002 to closure for the flexible design would range from about \$42.7 to \$57.3 billion (in 2001 dollars). DOE is reporting future costs for comparison with the No-Action Alternative. Historical costs through 2001 are \$8.8 billion (in 2001 dollars). The costs are representative and would vary somewhat, depending on the operating mode, packaging and transportation scenarios, and the Nevada transportation implementing alternative selected.

Table 2-5. Proposed Action costs from 2002 to closure.^{a,b}

Description	Operating mode	
	Higher-temperature	Lower-temperature
Monitored geologic repository	31.5	37.4 - 43.1
Waste acceptance, storage, and transportation	4.3	4.3
Nevada transportation	0.8	0.8
Program integration	2.2	2.4 - 3.7
Institutional	3.9	4.1 - 5.4
Total	\$42.7	\$49.0 - 57.3

a. Source: DIRS 156900-DOE (2001, all).

b. Adjusted to 2001 dollars, in billions per DIRS 156899-DOE (2001, Appendix A).

The activities comprising the cost elements, Monitored Geologic Repository; Waste Acceptance, Storage and Transportation; and Nevada Transportation in Table 2-5 are described in this EIS. The last two elements are Program Integration and Institutional. Program Integration includes Quality Assurance (which is a mandatory program to identify and ensure implementation of requirements that protect the health and safety of the public, workers, and environment), Program Management and Integration, and non-Office of Civilian Radioactive Waste Management costs associated with the NRC, Nuclear Waste Technical Review Board, and the Nuclear Waste Negotiator. Institutional includes financial assistance for transportation planning. Details about the estimated costs are in *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program* (DIRS 153255-DOE 2001, all) and *Life Cycle Cost Analysis for Repository Flexible Design Concepts* (DIRS 156900-DOE 2001, all). These reports provide further information on the basis of the estimates, time phasing of the expected expenditures, and the subdivision of the costs between the major activities noted in Table 2-5. For example, the cost to engineer and construct the repository would be approximately equivalent to the estimated program costs from 2002 to 2010 (proposed repository opening), or \$8.3 to \$9.1 billion (in 2001 dollars).

The most recent estimates show that approximately 70 percent of the repository-related costs would be paid from the Nuclear Waste Fund (fees collected by nuclear utilities from ratepayers) and about 30 percent from taxpayer revenues (primarily to pay for disposal of DOE spent nuclear fuel and high-level radioactive waste).